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10/584,891	09/04/2007	Young Soo Kim	K-0821	3460
34610 7590 09/15/2010 KED & ASSOCIATES, LLP P.O. Box 221200 Chantilly, VA 20153-1200				
EXAMINER				
PEYTON, DESMOND C				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/584,891

Applicant(s)

KIM ET AL.

Examiner

DESMOND PEYTON

Art Unit

3749

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/CD)
Paper No(s)/Mail Date 6/28/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 28 objected to because of the following informalities: it appears to have the same scope as Claim 15. Appropriate correction is required.

Joint Inventorship

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-10, and 18-25 rejected under 35 U.S.C. 102(b) as being anticipated by Shukla et al. (US Patent No. 4,569,328) hereinafter *Shukla* '328.

In Re Claim 1, *Shukla* '328 discloses a device (Fig. 2) for supplying mixed gas to gas burners of radiant heating type (#80, col. 3, line 39, ref. col. 2, line 29) having a housing (#70, Figs. 2 and 3), a plurality of burner assemblies (#72, Figs. 2 and 3, col. 3, line 33) in the housing for combustion of the mixed gas therein, each with a burner chamber (below #80) for supplying mixed gas of fuel gas and air thereto, and a glass plate (#76, Figs. 2 and 3, ref. col. 3, line 20) placed on top of the housing, comprising:

a plurality of mixing tubes (#82, Fig. 3) respectively in communication with the burner chambers for supplying the fuel gas and the air thereto;

a plurality of gas nozzles (in association with a gas valve #104 and a gas supply line #108) for respectively spraying the fuel gas into the mixing tubes;

a plurality of air supply tubes (#94, Figs. 2 and 3) each spaced a distance away from the other end of one of the mixing tubes, for supplying air toward the one of the mixing tubes; and

a fan unit (#86, Fig. 2) connected to an end of one of the air supply tubes for supplying air thereto.

In Re Claim 2, *Shukla* '328 further discloses the device as applied in Claim 1 above, wherein the air supply tube has one end spaced from the other end of the mixing tube in a radial direction (as shown in Fig. 3).

In Re Claim 3, *Shukla* '328 further discloses **the device** as applied in **Claim 1** above, **wherein the air supply tube has one end spaced from the other end of the mixing tube in a length direction.**

In Re Claim 5, *Shukla* '328 discloses **the device** as applied in **Claim 1** above, **further comprising at least one air supply chamber (#90, Fig. 2) between the air supply tubes and the fan unit for receiving air from the fan unit and supplying the air to the air supply tubes.**

In Re Claim 6, *Shukla* '328 further discloses **the device** as applied in **Claim 5** above, **wherein the air supply chamber has a plurality of air supply tubes (#94, Fig. 2) for other burner assemblies connected thereto in common.**

In Re Claim 7, *Shukla* '328 discloses **the device** as applied in **Claim 1** above, **further comprising at least one branch tube (#90, Fig. 2) having one end connected to the fan unit, and the other end connected to a plurality of the air supply tubes for distributing air from the fan unit to the plurality of air supply tubes.**

In Re Claim 8, *Shukla* '328 discloses **the device** as applied in **Claim 1** above, **further comprising a connecting member (#84, Fig. 3) for connecting the mixing tube to the air supply tube together.**

In Re Claim 9, *Shukla* '328 further discloses **the device** as applied in **Claim 8** above, **wherein the connecting member includes a nozzle holding member formed as a unit for holding the gas nozzle (shown in Fig. 3).**

In Re Claim 10, *Shukla* '328 further discloses **the device** as applied in **Claim 8** above, **wherein the connecting member is fixed to opposite sides of the mixing tube and the air supply tube with fastening means** (like shown in Figs. 1 and 3).

In Re Claim 18, *Shukla* '328 discloses a device for supplying mixed gas to gas burners of radiant heating type having a housing, a plurality of burner assemblies in the housing for combustion of the mixed gas therein, each with a burner chamber for supplying mixed gas of fuel gas and air thereto, and a glass plate placed on top of the housing, comprising:

- a plurality of mixing tubes respectively in communication with the burner chambers for supplying the fuel gas and the air thereto;
- a plurality of gas nozzles for respectively spraying the fuel gas into the mixing tubes;
- a plurality of air supply tubes each spaced a distance away from the other end of one of the mixing tubes, for supplying air toward the one of the mixing tubes;
- a fan unit for supplying air to the air supply tubes; and
- at least one air supply chamber (#90, Fig. 2) between the air supply tubes and the fan unit for receiving air from the fan unit and supplying the air to the air supply tubes (see claim 1 above, for limitation element correlation to prior art of *Shukla* '328, except where noted).

In Re Claim 19, *Shukla* '328 discloses **the device** as applied in **Claim 18** above, **wherein the air supply chamber is integrated inside of the housing**.

In Re Claim 20, *Shukla* '328 discloses the device as applied in Claim 18 above, wherein the air supply chamber has a plurality of air supply tubes of other burner assemblies connected thereto (#94, Fig. 2).

In Re Claim 21, *Shukla* '328 discloses a device for supplying mixed gas to gas burners of radiant heating type having a housing, a plurality of burner assemblies in the housing for combustion of the mixed gas therein, each with a burner chamber for supplying mixed gas of fuel gas and air thereto, and a glass plate placed on top of the housing, comprising:

a plurality of mixing tubes respectively in communication with the burner chambers for supplying the fuel gas and the air thereto;

a plurality of gas nozzles for respectively spraying the fuel gas into the mixing tubes;

a plurality of air supply tubes each having one end spaced a distance away from the other end of one of the mixing tubes, for supplying air to the one of the mixing tubes;

a fan unit for supplying air; and

at least one branch tube having one end connected to the fan unit, and the other end connected to a plurality of the air supply tubes for distributing air from the fan unit to the plurality of air supply tubes (see claim 1 above, for limitation element correlation to prior art of *Shukla* '328).

In Re Claim 22, *Shukla* '328 discloses a device for supplying mixed gas to gas burners of radiant heating type having a housing, a plurality of burner

assemblies in the housing for combustion of the mixed gas therein, each with a burner chamber for supplying mixed gas of fuel gas and air thereto, and a glass plate placed on top of the housing, comprising:

a mixing tube assembly including;

a mixing tube having one end in communication with the burner chamber for supplying fuel gas and air to the burner chamber,

an air supply tube formed as one unit with the mixing tube on an outside of the mixing tube such that one end thereof is spaced a distance away from the other end of the mixing tube for supplying air to the mixing tube, and

a connecting member for connecting the mixing tube and the air supply tube as one unit;

a gas nozzle at a position spaced a distance away from the mixing tube for spraying gas toward the mixing tube; and

a fan unit for blowing air to the air supply tube (see claim 1 above, for limitation element correlation to prior art of *Shukla* '328).

In Re Claim 23, *Shukla* '328 further discloses the device as applied in Claim 22 above, wherein the connecting member includes a nozzle holding part for holding the gas nozzle.

In Re Claim 24, *Shukla* '328 further discloses the device as applied in Claim 22 above, wherein the connecting member is fixed to opposite side parts of the mixing tube and the air supply tube with fastening means.

In Re Claim 25, *Shukla* '328 further discloses **the device** as applied in **Claim 22** above, **wherein the mixing tube assembly includes;**

a first mixing tube assembly having a first mixing tube part forming a first half of the mixing tube,

a first air supply tube part forming a first half of the air supply tube, and

a plate form of second connection member extended outward from both sides of the first mixing tube part and the first air supply part as one unit to connect the first mixing tube part and the first air supply part as one unit, and

a second mixing tube assembly having a second mixing tube part forming a second half of the mixing tube,

a second air supply tube part forming a second half of the air supply tube, and

a plate form of second connection member extended outward from both sides of the second mixing tube part and the second air supply part as one unit to connect the second mixing tube part and the second air supply part as one unit, and bonded with the first connection member (see claim 1 above, for limitation element correlation to prior art of *Shukla* '328).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla '328 in view of Beach et al. (US Patent No. 5,325,842) hereinafter Beach '842.*

In Re Claim 4, *Shukla '328* does not explicitly disclose the **device** as applied in **Claim 1, wherein the fan unit is on an outside of the housing.** *Beach '842* discloses a gas burner unit with a blower on an outside of its housing (shown in Fig. 2, *Beach '842*). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify *Shukla '328*'s fan unit to the outside of its housing for easy access to the fan unit for maintenance purposes.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla '328 in view of Riehl (US Patent No. 5,193,273) hereinafter Riehl '273.*

In Re Claim 11, *Shukla '328* discloses the **device** as applied in **Claim 8** above, except explicitly wherein the mixing tube, the air supply tube, and the connecting member form a mixing tube assembly having two symmetric members bonded together. *Riehl '273* discloses a method of making a set burner construction wherein the mixing tube (the Venturi section #11), the air supply tube (#25 at #27, col. 3, line 34), and the

connecting member (#21 and #22, Fig. 6) form a mixing tube assembly having two symmetric members bonded together (see Fig. 6). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to construct *Shukla* '328's mixing tube assembly **wherein the mixing tube, the air supply tube, and the connecting member form a mixing tube assembly having two symmetric members bonded together** as taught by *Riehl* '273 to simplify assembly and replacement.

In Re Claim 12, *Shukla* '328 in view of *Riehl* '273 further discloses **the device** as applied in **Claim 11** above, **wherein the mixing tube assembly includes;**

a first mixing tube assembly having

a first mixing tube part forming a first half of the mixing tube,

a first air supply tube part forming a first half of the air supply tube, and

a plate form of second connection member extended outward from both sides of the first mixing tube part and the first air supply part as one unit to connect the first mixing tube part and the first air supply part as one unit, and

a second mixing tube assembly having

a second mixing tube part forming a second half of the mixing tube,

a second air supply tube part forming a second half of the air supply tube, and

a plate form of second connection member extended outward from both sides of the second mixing tube part and the second air supply part as one unit to connect the second mixing tube part and the second air supply part as one unit, and bonded with the first connection member (reference *Riehl* '273).

Claims 13, 14, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla* '328.

In Re Claim 13, *Shukla* '328 discloses **the device** as applied in **Claim 8** above. *Shukla* '328 does not explicitly teach **wherein the mixing tube, the air supply tube, and the connecting member are injection molded as one unit**. It would have been an obvious matter of design choice to construct *Shukla* '328's mixing tube, air supply tube and connecting member as separate parts assembled together, since applicant has not disclosed that having the mixing tube, the air supply tube, and the connecting member as one injected molded unit solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the mixing tube, the air supply tube, and the connecting member as separate parts assembled together.

In Re Claim 14, *Shukla* '328 discloses **the device** as applied in **Claim 1** above. *Shukla* '328 does not explicitly teach wherein the air supply tube has the other end, facing the other end of the mixing tube, with a sectional area equal to, or greater than a sectional area of the other end of the mixing tube. It would have been obvious to one having ordinary skill in the art at the time the invention was made to construct *Shukla* '328's the device as applied in claim 1 above, **wherein the air supply tube has the other end, facing the other end of the mixing tube, with a sectional area equal to, or greater than a sectional area of the other end of the mixing tube**, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In Re Claim 26, *Shukla '328* discloses **the device** as applied in **Claim 22** above. *Shukla '328* does not explicitly teach **wherein the mixing tube assembly is formed as one unit by injection molding**. It would have been an obvious matter of design choice to construct *Shukla '328*'s mixing tube assembly formed from separate parts assembled together, since applicant has not disclosed that having **the mixing tube assembly formed as one unit by injection molding** solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the mixing tube assembly formed from separate parts assembled together.

In Re Claim 27, *Shukla '328* discloses **the device** as applied in **Claim 22** above. *Shukla '328* does not explicitly teach wherein the one end of the air supply tube facing the other end of the mixing tube has a sectional area equal to, or greater than a sectional area of the other end of the mixing tube. It would have been obvious to one having ordinary skill in the art at the time the invention was made to construct *Shukla '328*'s the device as applied in claim 22 above, **wherein the one end of the air supply tube facing the other end of the mixing tube has a sectional area equal to, or greater than a sectional area of the other end of the mixing tube**, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claim 15 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla '328* in view of L.D. Houlis (US Patent No. 2,494,243) hereinafter *Houlis '243*.

In Re Claim 15, *Shukla* '328 discloses **the device** as applied in **Claim 1** above.

Shukla '328 does not explicitly disclose the device, wherein the one end of the air supply tube facing the other end of the mixing tube has a diameter becoming greater than other part to have an expanded tube form. *Houlis* '243 discloses a gas burner wherein a air supply tube (#10, #53, and #54, Fig. 7) has the other end (#10, Fig. 7) facing the other end of the mixing tube (#4 and #5, Figs. 1 and 7) with a diameter becoming greater than other part (#54 and #53, Fig. 7) to have an expanded tube form. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify *Shukla* '328's device **wherein the air supply tube has the other end facing the other end of the mixing tube with a diameter becoming greater than other part to have an expanded tube form** as taught by *Houlis* '243 to control the inflow of air to supply the burner according to the mixture and flame desired.

In Re Claim 28, *Shukla* '328 discloses **the device** as applied in **Claim 1** above.

Shukla '328 does not explicitly disclose the device, wherein the one end of the air supply tube facing the other end of the mixing tube has a diameter becoming greater than other part to have an expanded tube form. *Houlis* '243 discloses a gas burner wherein a one end of the air supply tube (#10, Fig. 7) facing the other end of the mixing tube (#4 and #5, Figs. 1 and 7) has a diameter becoming greater than other part (#54 and #53, Fig. 7) to have an expanded tube form. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify *Shukla* '328's device **wherein the one end of the air supply tube facing the other end of the mixing tube has a diameter becoming greater than other part to have an**

expanded tube form as taught by *Houlis* '243 to control the inflow of air to supply the burner according to the mixture and flame desired.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla* '328 in view of Herbert (US Patent No. 5,425,353) hereinafter *Herbert* '353.

In Re Claim 16, *Shukla* '328 discloses the device as applied in Claim 1 above, wherein the fan unit includes; a fan. *Shukla* '328 does not explicitly disclose a variable speed motor for varying rotation speed of the fan according to a gas spray rate through the gas nozzle. *Herbert* '353 discloses a cooking hob wherein the fan unit (#20) includes a fan and a variable speed motor for varying rotation speed of the fan according to a gas spray rate through the gas nozzle (col. 2, line 65-67, *Herbert* '353). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use a fan unit as described by *Herbert* '353 above in place of *Shukla* '328's to include a fan and a variable speed motor for varying rotation speed of the fan according to a gas spray rate through the gas nozzle, in order to maintain the desired gas/air ratio during a cooking cycle.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Shukla* '328 in view of Aldo (US Patent No. 6,261,089 B1) hereinafter *Aldo* '089.

In Re Claim 17, *Shukla* '328 discloses the device as applied in Claim 1 above, except explicitly wherein each one of the mixing tubes is connected to a plurality of air supply tubes for supplying air thereto. *Aldo* '089 discloses a fuel gas burner wherein each one of the mixing tubes (#3, Fig. 3) is connected to a plurality of air supply tubes (see Fig. 11 and 3) for supplying air thereto. It would have been obvious to one of

ordinary skill in the art at the time that the invention was made to have *Shukla* '328's device to **wherein each one of the mixing tubes is connected to a plurality of air supply tubes for supplying air thereto** as a design variation as taught by *Aldo* '089 (col. 2, lines 14).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached USPTO form 892 for list of prior art made of record.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DESMOND PEYTON whose telephone number is (571)270-1393. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./ 9/10/2010
Examiner, Art Unit 3749

/Steven B. McAllister/
Supervisory Patent Examiner, Art Unit 3749